



Letter to the Editor: how to document adverse reactions induced by gadolinium based contrast agents? A plea for type A and type B reactions

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Abbreviations

CM	Contrast medium
GBCA	Gadolinium-based contrast agent
MRI	Magnetic resonance imaging

Dear Editor,

With great interest, we read the paper by Johannes Uhlig et al [1]. The authors analysed the frequencies of “physiological” and “allergy-like” reactions in 72,839 patients receiving cardiac MRI with gadolinium-based contrast agents [1]. First, we would like to congratulate the authors, because the paper is very well written and their study very well conducted. Unfortunately, the nomenclature used has not convinced us. To explain the usefulness of “physiological” and “allergy-like” reactions was the motivation for us to comment this article.

Three or four decades ago, the designation of adverse CM-reactions as either “physiological” or “allergy-like” [2] was okay. Formerly, medical disciplines were distinct units, clearly separated from each other. Now, the borders become blurred, and interdisciplinary exchange, as well as big data dominate the scene. Against this background, radiology-typical terms and classifications are no longer up-to-date. Please let us have a closer look at the single terms.

What are “physiological” reactions? For example, the metabolism is a complex physiological reaction. In contrast, we do not believe that a severe renal insufficiency following the injection (= a non-physiological action) of a contrast medium (= a non-physiological substance) is a physiological reaction. In the latter context, “physiologic” sounds euphemistic. Therefore, we recommend replacing them by type A reactions

[3]. Type A reactions are related to the pharmacological properties of a drug/CM. Consequently, they are predictable and common [4].

What are “allergy-like” reactions? Allergy-like reaction means that following an allergy workup, no allergy has been found. Unfortunately, in the text of the article [1], there is no hint for an allergy testing. In such scenario, we recommend replacing the term “allergy-like reaction” by either type B reaction or “hypersensitivity reaction”. The terms type B/hypersensitivity reaction cover both “allergy-like” and “allergy” reactions [5]. These reactions are unpredictable, uncommon, and usually not related to the pharmacological properties of a drug [4]. Like iodinated contrast agents, GBCAs are also able to induce true allergy reactions [6].

Please be aware that language is the key to our world (after Wilhelm von Humboldt from the German “Sprache ist der Schlüssel zur Welt”). Language determines our activities. If we anticipate “allergy-like” reactions only, we kill all activities clarifying the nature of hypersensitivity reactions. It is counter-productive, on the one hand, to state that the mechanisms of such reactions are unknown [7] and, on the other hand, to propagate that only “allergy-like” reactions do exist. Under this premise, how should we ever find allergy mechanisms?

Moreover, in their paper, the authors classified the reaction based on clinical symptoms [1]. In this context, a word of caution. For example, nausea and vomiting may be either type A or B reactions. The latter can manifest with intestinal angioedema, which may be visible on images of the abdomen [8]. Therefore, an individual check is necessary for the exact classification.

Taken together, in the era of interdisciplinary working groups and big data, terms known in radiology only are not contemporary. In general, it does not matter how to designate adverse CM-reaction. The terms used should be uniform, logical, and correct. Exactly these important prerequisites, the frumpy terms “physiological” and “allergy-like” do not fulfil. Therefore, the so-called physiological and allergy-like reactions should be replaced by type A and B reactions.

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Ethical approval Institutional Review Board approval was not required, because this is a "Letter to the editor".

Methodology

- We did not use a special methodology, because this is a "Letter to the editor".

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